

## REMARKS

### Formal Matters

Claims 1-30 are pending.

Claims 1-30 were examined. Claims 1-30 were rejected.

Claim 1 is amended. The amendment was made solely in the interest of expediting prosecution, and is not to be construed as an acquiescence to any objection or rejection of any claim. Support for the amendments is found in the claims as originally filed, and throughout the specification, in particular page 8, lines 18-31. Accordingly, no new matter is added by this amendment.

Applicants respectfully request reconsideration of the application in view of the remarks made herein.

### Rejection of claims under 35 U.S.C. § 102-Becker

Claims 20-22, 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Becker (USPN 5,864,137). The Applicants respectfully traverse this rejection.

The rejected claims are directed to methods involving, *inter alia*, an "optical bench", to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench. A definition of the term "optically aligned within acceptable tolerances" is provided in the paragraph starting on line 33 on page 8 of the instant specification. According to the definition, two components of an ion optic system may be optically aligned within optical tolerances if they are aligned to maximize resolution of the spectra peaks. In many embodiments, the components are aligned to within a fraction of a degree.

Therefore, the "optical bench" of the instant claims provides for optical alignment of components of an ion optics system within acceptable tolerances. An bench to which ion optic components may be mounted cannot anticipate the claims

because it does not provide for optical alignment within acceptable tolerances. Similarly, a bench with mounted ion optic components that have been adjusted to be in acceptable optical alignment *after* they have been mounted onto the bench cannot anticipate the claims.

As such, in order to anticipate the instant claims, any cited art must show an "optical bench", as defined by the instant claims in view of the instant specification, that, itself, provides for acceptable optical alignment. An optical bench to which ion optic components may be mounted, or an optical bench with mounted optic components that have been adjusted to be in alignment, cannot anticipate the claims.

Becker discloses a time-of-flight mass spectrometer, and the Office argues that Becker provides a method for constructing an apparatus that anticipates claims 20-22, 26-28. The Applicants respectfully disagree.

Becker discusses in great detail the ion optics (see the section starting on line 4 of column 5), the electrical circuits and power sources (see the section starting at line 54 of column 7) and the TOF tube and alignment system (see the section starting at line 48 of column 9) used in his mass spectrometer. At no point does this reference mention that the ion optics components are mounted on an optical bench that provides for acceptable optical alignment. In fact, Becker discusses an alignment system on column 10, "The apparatus further includes an alignment system for aligning the ion optics 20 with the laser beam....." and "The lasing apparatus 18, which typically includes an adjustable steering mirror 5, is *adjusted* to bring the laser beam into alignment with the center of the disc of light" (emphasis added). As such, like all prior art mass spectrometer systems, Becker's mass spectrometer is not assembled using an optical bench that provides for acceptable optical alignment of the optical components.

Since Becker does not disclose an optical bench that provides for acceptable optical alignment of optical components mounted to the bench, Becker cannot anticipate the claims.

In the Office Action, the Examiner states that "it is the examiner's view that

the apparatus in figure 1A of Becker [137] is optically aligned and secured within acceptable tolerances.” While it is possible that Becker’s apparatus of figure 1A is optically aligned, figure 1A provides no indication that the alignment is achieved using the instant optical bench. In fact, in view of Becker’s specification, the alignment of Becker’s optics is done using an alignment system. The Applicants respectfully submit that the mass spectrometer shown in Becker’s figure 1A fails to teach the claim-recited optical bench, and, as such, Becker cannot anticipate the rejected claims.

Withdrawal of this rejection is respectfully requested.

**Rejection of claims under 35 U.S.C. § 102-Kirchner**

Claims 10, 20 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kirchner (USPN 5,464,975). The Applicants respectfully traverse this rejection.

The rejected claims are directed to compositions involving, as discussed above, an “optical bench” to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

As such, in order to anticipate the instant claims, any cited art must show an “optical bench”, that provides for acceptable optical alignment of ion optic components mounted to it. An optical bench to which ion optic components may be mounted, or an optical bench with mounted optic components that have been adjusted to be in alignment, cannot anticipate the claims.

Kirchner discloses a retrofittable quadrupole mass spectrometer, and the Office argues that Kirchner provides an apparatus that anticipates claims 10, 20 and 26. The Applicants respectfully disagree.

With reference to Kirchner’s Fig. 4A, abstract, col. 11 lines 25-67, col. 12 lines 25-35, and col. 18 lines 50-60, the Examiner reasons that Kirchner discloses the subject matter of the rejected claims. However, Kirchner’s Fig. 4A, abstract, col. 11 lines 25-67, col. 12 lines 25-35, and col. 18 lines 50-60 provides no

guidance to use an optical bench that provides for acceptable optical alignment.

In fact Kirchner, like Becker, describes his invention in great detail but at no point does he mention that the ion optics components are mounted on an optical bench that provides for acceptable optical alignment. Kirchner is, in fact, completely silent as to how alignment of the optical components of his mass spectrometer is achieved.

The Examiner also states that "Kirchner [975] does indeed teach a base mating face and a support mating wherein the part of the support that is mated to the base mating face is optically aligned. See Kirchner [975] fig. 4A". Again, like Becker, while it is possible that Kirchner's apparatus of fig. 4A is optically aligned, fig. 4A provides no indication that the alignment is done achieved using the claim-recited optical bench. Since Kirchner's specification is silent as to how optical alignment is achieved, fig. 4A fails to teach the optical bench recited in the claims.

Since Kirchner does not disclose an optical bench that provides for acceptable optical alignment of optical components mounted to the bench, Becker cannot anticipate the claims.

Withdrawal of this rejection is respectfully requested.

**Rejection of claims under 35 U.S.C. § 102-Blessing**

Claim 30 is rejected under 35 U.S.C. 102(e) as being anticipated by Blessing (USPN 6,239,429). The Applicants respectfully traverse this rejection.

Claim 30 is directed to an apparatus containing, *inter alia*, a base having a groove with an electrical lead sequestered in the groove.

Blessing's apparatus is best seen in Fig. 2. This figure shows a retainer block 101 containing radial grooves 121 that the Examiner asserts anticipates claim 30.

However, as discussed in Blessing column 6, lines 40-43, "the retainer block 101 has four radial grooves 121 on each end face to permit trapped gasses to escape during evacuation of the QMA." In other words, Blessing state that these grooves are for gas escape.

As such, Blessings grooves are for gas escape, not for sequestration of an electrical lead.

Accordingly, Blessing does not disclose an apparatus containing, a base having a groove with an electrical lead sequestered in the groove.

In view of the foregoing discussion, withdrawal of this rejection is respectfully requested.

**Rejection of claims under 35 U.S.C. § 103-Meek**

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being obvious in view of Meek (USPN 4,686,365). The Applicants respectfully traverse this rejection.

The rejected claims are directed to compositions involving, as discussed above, an "optical bench" to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

As such, in order to render the instant claims obvious, any cited art must disclose, suggest, or otherwise teach an "optical bench" that provides for acceptable optical alignment of ion optic components mounted to it. An optical bench to which ion optic components may be mounted, or an optical bench with mounted optic components that have been adjusted to be in alignment, is not sufficient to render the instant claims obvious.

Meek discloses an ion cyclotron resonance (ICR) trapping cell in Fig. 1, which cell resembles a hollow cube with a screened window on one of the walls of the cell. The Office Action asserts in order to observe the motion of ions, a skilled person would attach a component of an ion optics system to a wall of the cell.

While a component of an ion optics system could be mounted to Meek's ICR cell, the ICR cell itself, because it is basically nothing more than a hollow cube, would not provide acceptable optical alignment of ion optic components mounted to it. Since Meek's disclosure fails to disclose, suggest, or otherwise make any reference to an optical bench that provides acceptable optical alignment of ion optic components mounted to it, it cannot make the subject matter of the instant

claims obvious.

In view of the foregoing discussion, withdrawal of this rejection is respectfully requested.

**Rejection of claims under 35 U.S.C. § 103-Becker**

Claims 1-5, 10 and 13-18 are rejected under 35 U.S.C. 103(a) as being obvious in view of Becker (USPN 5,864,137). The Applicants respectfully traverse this rejection.

The rejected claims are directed to compositions involving, as discussed above, an "optical bench" to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

As such, in order to render the instant claims obvious, any cited art must disclose, suggest, or otherwise teach an "optical bench" that provides for acceptable optical alignment of ion optic components mounted to it. An optical bench to which ion optic components may be mounted, or an optical bench with mounted optic components that have been adjusted to be in alignment, is not sufficient to render the instant claims obvious.

The Office Action asserts that Becker's ion optics component and TOF tube could be moved, as a mere reversal of parts, from a lid to a wall, thereby anticipating the subject matter of the rejected claims.

As established above, Becker is deficient in that it fails to disclose an "optical bench" to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

A mere transfer of Becker's ion optics component and TOF tube from a lid to a wall fails to meet Becker's primary deficiency, and, as such, Becker fails to teach this element of the claimed invention.

In view of the foregoing discussion, withdrawal of this rejection is respectfully requested.

**Rejection of claims under 35 U.S.C. § 103- Kirchner**

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being obvious in view of Kirchner (USPN 5,464,975). The Applicants respectfully traverse this rejection.

The rejected claims are directed to compositions involving, as discussed above, an “optical bench” to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

As such, in order to render the instant claims obvious, any cited art must disclose, suggest, or otherwise teach an “optical bench” that provides for acceptable optical alignment of ion optic components mounted to it. An optical bench to which ion optic components may be mounted, or an optical bench with mounted optic components that have been adjusted to be in alignment, is not sufficient to render the instant claims obvious.

The Office Action asserts that it would have been obvious to modify Kirchner’s apparatus by adding a corresponding support mating face containing a geometrical shape in order to provide a better seal between the base and the support.

As established above, Kirchner is deficient in that it fails to disclose an “optical bench” to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

Addition of a corresponding support mating face containing a geometrical shape to Kirchner’s apparatus fails to meet Kirchner’s deficiency, and, as such, Kirchner fails to teach this element of the claimed invention.

In view of the foregoing discussion, withdrawal of this rejection is respectfully requested.

**Rejection of claims under 35 U.S.C. § 103- Young/Kirchner**

Claims 1,6 and 8-9 are rejected under 35 U.S.C. 103(a) as being obvious in

view of Young (USPN 5,360,976) in view of Kirchner. The Applicants respectfully traverse this rejection.

The rejected claims are directed to compositions involving, as discussed above, an "optical bench" to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

As such, in order to render the instant claims obvious, any cited art must disclose, suggest, or otherwise teach an "optical bench" that provides for acceptable optical alignment of ion optic components mounted to it. An optical bench to which ion optic components may be mounted, or an optical bench with mounted optic components that have been adjusted to be in alignment, is not sufficient to render the instant claims obvious.

Young discloses a portable time of flight mass spectrometer, and, like Kirchner, fails to disclose, teach, or otherwise suggest an "optical bench" to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

As such, Young and Kirchner, taken together or separately, fail to teach an element of the claimed invention. Accordingly, they cannot render the subject matter of the rejected claims obvious.

Further, the Office Action states that a skilled person would combine the disclosures of Young and Kirchner to "provide a covering in order to produce a vacuum area for the ions to pass through". The Applicants respectfully fail to see how this would motivate a skilled person to specifically combine the disclosures of Young and Kirchner because providing a covering in order to provide a vacuum area for ions to pass through would not motivate a skilled person to combine the references. As such, the Applicants respectfully submit that the Office has failed to provide adequate motivation to combine these references.

In view of the foregoing discussion, withdrawal of this rejection is respectfully requested.

**Rejection of claims under 35 U.S.C. § 103- Kirchner/Young/Blessing**

Claims 19, 23-25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirchner (USPN 5,464,975), in view of Young (USPN 5,360,976), in further view of Blessing (USPN 6,239,429). The Applicants respectfully traverse this rejection.

The rejected claims are directed to compositions involving, as discussed above, an "optical bench" to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

As such, in order to render the instant claims obvious, any cited art must disclose, suggest, or otherwise teach an "optical bench" that provides for acceptable optical alignment of ion optic components mounted to it. An optical bench to which ion optic components may be mounted, or an optical bench with mounted optic components that have been adjusted to be in alignment, is not sufficient to render the instant claims obvious.

As discussed above, Young and Kirchner are deficient in that they fail to teach an "optical bench" to which components of an ion optic system (e.g., mirrors, lenses, etc.) may be attached so that they are optically aligned within acceptable tolerances upon their attachment to the bench.

Blessing is cited for providing a groove, which is not an "optical bench", and, as such, does not make up Young and Kirchner's deficiencies. Since Blessing's groove fails to make up the deficiencies of Young and Kirchner, Young, Kirchner and Blessing, taken together or separately, fail to disclose an element of the claimed invention. Accordingly, the claimed invention cannot be obvious in view of Young, Kirchner and Blessing.

Furthermore, as discussed above, Blessings groove is a groove for gas escape, not a groove for sequestering an electrical lead. As such, even if these references could be combined to teach an "optical bench" to which components of an ion optic system may be attached so that they are optically aligned within

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acceptable tolerances upon their attachment to the bench, they would still not teach all of the elements of 19, 23-25 and 29 because a groove for sequestering an electrical lead is not taught.

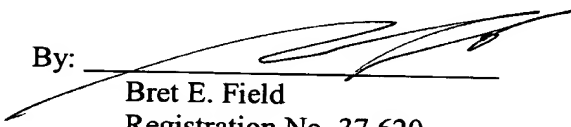
In view of the foregoing discussion, withdrawal of this rejection is respectfully requested.

CONCLUSION

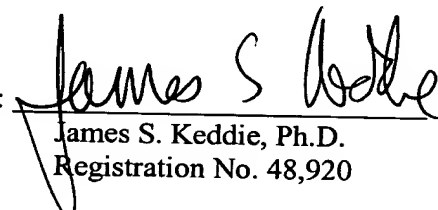
The applicants respectfully submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Timothy Joyce at 650 485 4310. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-1078.

Respectfully submitted,

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